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09/853,706	05/14/2001	Makoto Hiramatsu	35.C15359	6579

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EXAMINER

MISLEH, JUSTIN P

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/853,706

Applicant(s)

HIRAMATSU ET AL.

Examiner

Justin P Misleh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/19/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 22 is/are pending in the application.
- 4a) Of the above claim(s) 8 - 15 and 22 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 - 21 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 16 is/are rejected.
- 7) ☒ Claim(s) 3 - 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/22/02</u> <u>3/28/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. **Claims 8 – 15** are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Applicant timely traversed the election requirement in the reply filed on 19 November 2004.

2. In the reply filed 19 November 2004, Applicant elected Species I represented by Figures 1 – 18 and further stated that Claims 1 – 7 and 16 – 22 read on the elected species.

3. The Examiner disagrees with Applicant's election on the basis that Claim 22 belongs to the nonelected species. Claim 22 recites a method including "a determining step of determining during photographing whether an exposure time exceeds a predetermined threshold value", which is clearly shown in the figures of the nonelected species. More specifically, the "determining step" recited above can found in nonelected figures 21, 24, 26, and 28 – 30 and nonelected Claim 8.

4. For these reasons, **Claim 22** is also withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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6. The disclosure is objected to because of the following informalities: minor typographical errors.

- On page 15 (line 3), the specification recites, “predetermined time S1” however, figure 9 clearly shows a “predetermined time S”. Change to the latter is recommend by the Examiner.

Appropriate correction is required.

Drawings

7. **Figures 1 – 4** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the Examiner does not accept the changes, the Applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

8. **Claims 2 and 3** are objected to because of the following informalities: lack of consistency.

- *Claims 2 and 3* recites therein, “first subtraction processing means for executing a subtraction process between each acquisition result from said second image information

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acquiring means and the acquisition result from said first image information acquiring means”, which lacks consistency with previous recitations.

The Examiner recommends making the following change: “first subtraction processing means for executing a subtraction process between each second image information acquired from said second image information acquiring means and the first image information acquired from said first image information acquiring means”. The Examiner further recommends this change in relation to the third image information acquiring means and the second subtraction processing means.

o *Claim 3* also recites therein, “third image information acquiring means for repetitively acquiring, a second predetermined number of times while said image pickup means is closed after image pickup”, which lacks consistency with a previous recitation.

The Examiner recommends making the following change: third image information acquiring means for repetitively acquiring, a second predetermined number of times while said shielding means is closed after image pickup”.

9. **Appropriate correction is required.** Furthermore, Applicant is encouraged to thoroughly review all claim language for similar inconsistencies and other typographical errors.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. **Claim 1** is rejected under 35 U.S.C. 102(e) as being anticipated by Rashkovskiy et al.
12. For **Claim 1**, Rashkovskiy et al. disclose, as shown in figures 2, 7 – 9, and 13 and as stated in columns 2 (lines 19 – 50) and 3 (line 55) – 5 (line 33), an image input apparatus (figure 2) comprising:

an image pickup region (in Digital Camera 18) including a plurality of pixels each for converting an optical image from an object into electrical image information and accumulating the electrical image information; and

a processing circuit (Computer 22) adapted to process the image information from said image pickup region, wherein said processing circuit (22) generates image data by performing a subtraction operation (see equations in column 4, lines 52 – 67) and an addition operation (see equations in column 4, lines 52 – 67) on the basis of a plurality of first image information read out in a time-series manner from the same pixel during one exposure operation (video frame 26), and a plurality of second image information (noise frames 24) sequentially read out from the same pixel in a shielded state (see column 2, lines 19 – 50).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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14. **Claims 2 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rashkovskiy et al. in view of Frey.

15. For **Claim 2**, Rashkovskiy et al. disclose, as shown in figures 2, 7 – 9, and 13 and as stated in columns 2 (lines 19 – 50) and 3 (line 55) – 5 (line 33), an image input apparatus (figure 2) comprising image pickup means (Digital Camera 18) for converting an optical image from an object into electrical image information and accumulating the electrical image information, shielding means (included in Digital Camera 18; see column 2, line 65 – column 3, line 10) for shielding said image pickup means from incidence of the optical image, and processing means (Computer 22) for processing the image information from said image pickup means,

wherein said processing means (Computer 22) comprises first image information acquiring means for acquiring first image information (video frames 26) accumulated in said image pickup means with said shielding means open, second image information acquiring means for acquiring second image information (noise frames 24) accumulated in said image pickup means with said shielding means closed, subtraction processing means (in the Computer 22) for executing a subtraction process between the acquisition result from said first image information acquiring means and the acquisition result from said second image information acquiring means, repetitive executing means for repetitively executing the operations by said first image information acquiring means, said second image information acquiring means, and said subtraction processing means a predetermined number of times (see figures 3 – 6 and column 2, lines 35 – 65 and column 3, lines 33 – 55).

While Rashkovskiy et al. disclose that the output the subtraction processing means yields noise reduced image data or rather corrected image, Rashkovskiy et al. do not disclose adding

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the noise reduced image data, the corrected image, or, more specifically, an addition means for adding the results of the repetitively executed subtraction process by said subtraction processing means.

On the other hand, Frey also discloses an image input apparatus including a first image acquisition means, second image acquisition means, and subtraction means. More specifically, Frey teaches, as shown in figures 9 – 11 and as stated in column 14 (line 36) – column 15 (line 35), an image input apparatus (see figure 1) for capturing images, wherein subsequent captured images are compared with each other (in Step S80), corrected by a gain circuit (in Step S90), and added to a previously corrected image (in Step S100) to adjust the offset in the gain circuit. Furthermore, Frey teaches that the results of the comparison and correction may be averaged (see column 14, lines 44 – 55). Thus, Frey provides addition means for adding the results of the repetitively executed subtraction process by said subtraction processing means.

As stated in column 2 of Frey, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included an addition means for adding the results of the repetitively executed subtraction process by said subtraction processing means, as taught by Frey, in the image input apparatus, disclosed by Rashkovskiy et al., for the advantage of providing a system that satisfies the need for reliably correcting fixed pattern noise errors in imaging systems without requiring additional complex mechanical or optical elements.

16. For **Claim 16**, Rashkovskiy et al. disclose, as shown in figures 2, 7 – 9, and 13 and as stated in columns 2 (lines 19 – 50) and 3 (line 55) – 5 (line 33), an image data processing method (figure 2) comprising an image pickup step (Digital Camera 18) of converting an optical image from an object into electrical image information and accumulating the electrical image

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information in image pickup means, a shielding step (included in Digital Camera 18; see column 2, line 65 – column 3, line 10) of shielding said image pickup means from incidence of the optical image by using shielding means, a processing step (Computer 22) of processing the image information from said image pickup means,

wherein said processing step (Computer 22) comprises first image information acquiring step for acquiring first image information (video frames 26) accumulated in said image pickup means with said shielding means open, second image information acquiring step for acquiring second image information (noise frames 24) accumulated in said image pickup means with said shielding means closed, a subtraction step (in the Computer 22) for executing a subtraction process between the acquisition result from said first image information acquiring step and the acquisition result from said second image information acquiring step, repetitive executing step for repetitively executing the operations by said first image information acquiring step, said second image information acquiring step, and said subtraction processing step a predetermined number of times (see figures 3 – 6 and column 2, lines 35 – 65 and column 3, lines 33 – 55).

While Rashkovskiy et al. disclose that the output the subtraction processing step yields noise reduced image data or rather corrected image, Rashkovskiy et al. do not disclose adding the noise reduced image data, the corrected image, or, more specifically, an addition step for adding the results of the repetitively executed subtraction process by said subtraction processing step.

On the other hand, Frey also discloses an image data processing method including a first image acquisition step, second image acquisition step, and subtraction step. More specifically, Frey teach, as shown in figures 9 – 11 and as stated in column 14 (line 36) – column 15 (line 35),

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an image data processing method (see figure 1) for capturing images, wherein subsequent captured images are compared with each other (in Step S80), corrected by a gain circuit (in Step S90), and added to a previously corrected image (in Step S100) to adjust the offset in the gain circuit. Furthermore, Frey teaches that the results of the comparison and correction may be averaged (see column 14, lines 44 – 55). Thus, Frey provides an addition step for adding the results of the repetitively executed subtraction process by said subtraction processing step.

As stated in column 2 of Frey, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included an addition step for adding the results of the repetitively executed subtraction process by said subtraction processing step, as taught by Frey, in the image data processing step, disclosed by Rashkovskiy et al., for the advantage of providing a method that satisfies the need for reliably correcting fixed pattern noise errors in imaging systems without requiring additional complex mechanical or optical elements.

Cited Prior Art

17: The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure for the following reasons:

- **Corum et al.; Bakhle et al.; Dhuse et al.; MacLean; and Denyer et al.** each disclose an image data processing system and corresponding method that at least includes capturing a plurality of first images with an image acquiring means while a shielding means is open and capturing a plurality of second images with the image acquiring means while the shielding means is closed and subtracting the plurality of first images from the plurality of second images so as to produce a plurality of corrected first image data.

○ Shimizu; Inagaki et al.; and Tsuda each disclose an image data processing system and corresponding method as at least disclosed by Corum et al.; Bakhle et al.; Dhuse et al.; MacLean; and Denyer et al., further including additionally details regarding the subtracting.

Allowable Subject Matter

18. **Claims 3 – 7** are objected to because of informalities therein (see above), but would be allowable if rewritten/amended to overcome the informalities and **Claims 17 – 21** are allowed.

19. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior discloses an image input apparatus and corresponding method of operating thereof, including the following components/steps:

image pickup means/step for converting an optical image from an object into electrical image information and accumulating the electrical image information, shielding means/step for shielding said image pickup means from incidence of the optical image, and processing means/step for processing the image information from said image pickup means,

wherein said processing means/step comprises first image information acquiring means/step for acquiring first image information by closing said shielding means before image pickup, second image information acquiring means/step for repetitively acquiring, a first predetermined number of times with said shielding means open, second image information accumulated in said image pickup means within a predetermined period, first subtraction processing means/step for executing a subtraction process between each acquisition result

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from said second image information acquiring means and the acquisition result from said first image information acquiring means, first addition means/step for adding the subtraction results from said first subtraction processing means.

However, the closest prior art does not teach or fairly suggest the image input apparatus and corresponding method of operating thereof, wherein the processor means/step further including the following components/steps:

third image information acquiring means/step for repetitively acquiring, a second predetermined number of times while said shielding means is closed after image pickup, third image information accumulated in said image pickup means within a predetermined period, second subtraction processing means/step for performing a subtraction process between each acquisition result from said third image information acquiring means and the acquisition result from said first image information acquiring means, second addition means/step for adding the subtraction results from said second subtraction processing means, and adding-up means/step for adding up said first and second addition means.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 571.272.7313. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:00 PM and on alternating Fridays from 8:00 AM to 4:30 PM.

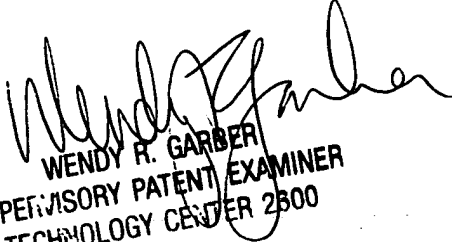
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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 571.272.7308. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM

April 3, 2005


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